REMARKS

Favorable reconsideration of this application is respectfully requested in view of the following remarks.

Claims 5 and 9 have been amended without narrowing the claim scope to change the recitation of "a" predetermined portion to --the-- predetermined portion because the predetermined portion is previously referenced in Claim 2. Also, the reference to "an" axial direction in Claim 9 has been changed to --the-- axial direction because the axial direction is already mentioned in Claim 2.

As summarized above in the claim listing, Claims 1, 11 and 15 have been canceled. Thus, Claims 2-10, 12-14 and 16-23 are currently pending in this application.

The Official Action indicates that Claims 7, 8 17, 20 and 22 are directed to the non-elected species and have thus been withdrawn from further consideration. Applicants respectfully traverse the withdrawal from consideration of Claims 17, 20 and 22 because those claims are readable on the elected species as discussed below.

Dependent Claim 17 recites that the hollow crash box includes at least one partition in the interior of the box that divides the interior into a plurality of interior sections. The elected species illustrated in Figs. 1-4 includes at least one partition in the interior of the hollow crash box such as depicted by way of example in Fig. 1(a). Thus, Claim 17 is readable on the elected species.

Claims 20 and 22 define that the hollow crash box has a substantially rectangular cross-section and includes two partitions in the interior of the hollow crash box, with the partitions extending along the axis of the hollow crash box and being perpendicular to each other to divide the crash box interior into four sections. Once again, the elected species illustrated in Figs. 1-4 includes a hollow crash box possessing a substantially rectangular cross-section and provided with two partitions in the interior arranged in the claimed manner to divide the crash box interior into four sections. Fig. 1(a) illustrates by way of example these features related to the elected species.

In light of the foregoing, it is respectfully requested that Claims 17, 20 and 22 be examined together with the other claims readable on the elected invention and species. In the event the Examiner continues to believe that Claims 17, 20 and 22 are not readable on the elected species shown in Figs. 1-4, the Examiner is kindly asked to provide an appropriate explanation supporting such conclusion.

In light of the foregoing, the claims currently at issue in this application are Claims 2-6, 9, 10, 12-14 and 16-23, with Claims 2 and 12 being the only independent claims.

The claims in this application are directed to a vehicle bumper. As recited in independent Claim 2, the vehicle bumper comprises a bumper reinforce and a hollow crash box extending from the bumper reinforce and having a first end coupled to the bumper reinforce and a second end coupled to the vehicle body,

wherein upon receiving an axial load the crash box is plastically deformed to absorb the axial load. An initial buckling portion is previously formed only in a predetermined portion of the crash box that is close to one of the first and second ends, while part of the crash box that has no initial buckling portion has a constant cross-section along the axial direction of the crash box. The plastic deformation of the crash box due to axial load starts at the initial buckling portion and progresses toward the other one of the first and second ends from the initial buckling portion so that the part of the crash box having no initial buckling portion is gradually deformed.

Independent Claim 12 recites that the vehicle bumper comprises a bumper reinforce and a hollow crash box having first and second ends, with one of the ends of the crash box being coupled to the bumper reinforce and the other end of the crash box being coupled to the vehicle body. The hollow crash box comprises an initial buckling portion at which plastic deformation of the hollow crash box starts when the crash box receives a load. This initial buckling portion is formed by plastic deformation of a part of the crash box before the vehicle bumper is mounted on the vehicle and is located only in such part of the crash box. The entire part of the crash box in which is located the plastically deformed initial buckling portion is closer to the first end of the hollow crash box than the second end of the hollow crash box, with the start of plastic deformation of the hollow crash box occurring at a specific portion of the hollow crash box defined by the initial buckling portion and proceeding toward an adjacent portion of the hollow crash box.

The Official Action sets forth an anticipatory rejection of Independent Claims 2 and 12 based on the disclosure contained in U.S. Patent No. 6,203,098 to *Motozawa et al.* That rejection is respectfully traversed for at least the following reasons.

Motozawa et al. discloses an automotive side member defined by a hollow rod member. The rod member is provided with a slit 5 to form a bifurcated beam or bent portion 6. The rod member also includes a relatively short collapsing portion 8 connected to the front end of the bent portion 6 by way of a thrust plate 7. The collapsing portion 8 includes a stress concentration portion 9. *Motozawa et al.* specifically states in column 3, lines 49-54, that the stress concentration portions 9 are defined by beads, notches or the like designed to lower the initiation load for compressive deformation to near the average reaction load. This same stress concentration portion 9 is used in the other embodiments of the automotive side member shown in Figs. 6 and 10 of *Motozawa et al.*

One of the differences between the bumper according to the present invention and the disclosure contained in *Motozawa et al.* is that the initial buckling portion is a plastically deformed portion that is formed by applying an axial load to material forming the crash box before the vehicle bumper is mounted on the vehicle. As discussed in the last full paragraph on page eight of the application, with this construction of the initial buckling portion, it is not necessary to utilize a die, particularly a specially prepared die, to form the crash box with the initial buckling

portion. Also, the initial buckling portion does not require a welding machine to form weld beads. This thus makes it possible to realize improvements in productivity and reductions in costs. Also, because the initial buckling portion is formed as a plastically deformed portion formed by applying an axial load to material forming the crash box prior to mounting the bumper on the vehicle, it is possible to realize a relatively smooth progression of the crash box plastic deformation upon collision. That is, when the vehicle collides with an object resulting in application of an axial load to the crash box, plastic deformation of the crash box can progress relatively smoothly from the initial buckling portion.

To more clearly distinguish the vehicle bumper recited in Claim 2 over the disclosure contained in *Motozawa et al.*, Claim 2 has been amended to recite that the initial buckling portion is a plastically deformed portion formed by supplying an axial load to the material forming the crash box before the vehicle bumper is mounted on the vehicle. This claimed feature, together with the other claimed aspects of the invention recited in Claim 2, differs from the disclosure in *Motozawa et al.* in that the stress concentration portion 9 disclosed in *Motozawa et al.* is not a plastically deformed portion formed by supplying an axial load to the material forming the crash box before the vehicle bumper is mounted on the vehicle. Rather, *Motozawa et al.* states that the stress concentration portion 9 is defined by beads, notches or the like.

Independent Claim 12 presented in the Amendment filed on July 21, 2003 included the recitation defining that the initial buckling portion is formed by plastic deformation of a part of the crash box before the vehicle bumper is mounted on the vehicle. The most recent Official Action does not address this portion of the claimed invention. To more clearly set forth this aspect of the claimed subject matter, Claim 12 has been amended to recite that the plastic deformation of the crash box part results from applying an axial load to material forming the crash box so that the plastically deformed initial buckling portion extends around the entire circumference of the crash box and includes projections and recess which are alternately arranged in the circumferential direction of the crash box. Because the crash box part is formed by plastic deformation caused by application of an axial load to the crash box material so that the plastically deformed initial buckling portion extends around the entire circumference of the crash box and includes projections and recess alternately circumferentially arranged, the crash box is able to absorb a relatively significant amount of impact energy upon the occurrence of a vehicle collision. Quite clearly, *Motozawa et al.* does not disclose, together with the other features recited in Claim 12, an initial buckling portion formed by plastic deformation of a part of the crash box caused by applying an axial load to the material forming the crash box so that the plastically deformed initial buckling portion extends around the entire circumference of the crash box, with the plastically deformed initial buckling portion

including projections and recess alternately circumferentially arranged on the crash box.

For at least the reasons set forth above, it is respectfully submitted that independent Claims 2 and 12 are patentably distinguishable over the disclosure contained in *Motozawa et al.*

The dependent claims are allowable at least by virtue of their dependence from allowable independent claims. In addition, the dependent claims define further distinguishing aspects associated with the present invention. For example, Claim 5 recites that the initial buckling portion extends along the entire circumference of the predetermined portion in the axial direction and includes projections and recess alternately arranged in the circumferential direction of the crash box. As pointed out above with respect to independent Claim 12, *Motozawa et al.* lacks a disclosure of these additional aspects of the present invention.

Early and favorable action with respect to this application is respectfully requested.

Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful

in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

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